

Inside:

NEW SRMs	1
SRM 3000's	1 & 2
SRM 2036	3
SRM 2395	4
SRM 3230	5
SRM 3231	5
RM 8457	6

Exhibit Schedule	7
-------------------------	----------

SRM GROUP News	8
-----------------------	----------

Revisions	9
SRM 114p	9
SRM 956a	9
SRM 1549	9
SRM 1647d	9
SRM 1677c	9
SRM 1776-1780	9
SRM 1951a	9
SRM 1963	10
SRM 2392	10
SRM 2538	10
SRM 2709	10
SRM 2710	10
SRM 2711	10
SRM 2721	10
SRM 2722	10
SRM 2740a	10
SRM 2741a	10
SRM 2810	10
SRM 2811	11
SRM 2812	11
SRM 2910	11
SRM 3127a	11
SRM 3132	11
SRM 3156	11
SRM 3167a	11
SRM 3194	11
SRM 3198	11

Renewal SRMs	11
SRM 186-I-g	11
SRM 186-II-g	11
SRM 1474a	11
SRM 1974b	11
SRM 2193a	11
SRM 2392-I	11
SRM 3190	11

NIST

**National Institute of
Standards and Technology**
Technology Administration
U.S. Department of Commerce

New NIST SRMs

NIST SRMs 3000's EPA: Organic Compounds Related to Water Analysis



NIST announces the release of SRMs certified for organic compounds related to water analysis. These SRMs are intended primarily for the calibration of instrumentation and validation of methods for volatile or semi-volatile organic

compound determinations. Because of its miscibility with water, each SRM can also be used to fortify aqueous samples with known amounts of the organic compound. These SRMs were developed by the NIST Analytical Chemistry Division (ACD) primarily to support the Chemical Calibration Providers of the Proficiency Testing Program with support by the U.S. Environmental Protection Agency (EPA). Watch for updates on additional SRMs for water analysis.

continued page 2...

LOOK: SRMs NOW AVAILABLE

SRM 133b	Chromium – Molybdenum Steel
SRM C1251a	Phosphorus Deoxidized Copper – Cu VIII
SRM C1252a	Phosphorus Deoxidized Copper – Cu IX
SRM 1727	Anode Tin

NIST SRM 3000's Standards Now Available

SRM	TYPE	UNIT OF ISSUE
3000	Benzene in Methanol	2 x 2.5 mL
3001	Toluene in Methanol	2 x 2.5 mL
3002	Ethylbenzene in Methanol	2 x 2.5 mL
3003	o-Xylene in Methanol	2 x 2.5 mL
3004	m-Xylene in Methanol	2 x 2.5 mL
3005	p-Xylene in Methanol	2 x 2.5 mL
3006	Carbon Tetrachloride in Methanol	2 x 2.5 mL
3008	Methylene Chloride in Methanol	2 x 2.5 mL
3009	1,2-Dichloropropane in Methanol	2 x 2.5 mL
3010	Tetrachloroethene (Tetrachloroethylene) in Methanol	2 x 2.5 mL
3011	1,1,1-Trichloroethane in Methanol	2 x 2.5 mL
3012	1,2-Dichloroethane in Methanol	2 x 2.5 mL
3014	1,2,3-Trichloropropane in Methanol	2 x 2.5 mL
3015	Isopropylbenzene in Methanol	2 x 2.5 mL
3016	sec-Butylbenzene in Methanol	2 x 2.5 mL
3063	2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD) in Methanol	5 x 1.2 mL
3064	Endothall in Water	5 x 1.2 mL
3067	Toxaphene in Methanol	5 x 1.2 mL
3068	Chlordane in Methanol	5 x 1.2 mL
3071	Glyphosate in Water	5 x 1.2 mL
3072	Diquat Dibromide Monohydrate in Water	5 x 1.2 mL
3075	Aroclor 1016 in Transformer Oil	5 x 1.2 mL
3076	Aroclor 1232 in Transformer Oil	5 x 1.2 mL
3077	Aroclor 1242 in Transformer Oil	5 x 1.2 mL
3078	Aroclor 1248 in Transformer Oil	5 x 1.2 mL
3079	Aroclor 1254 in Transformer Oil	5 x 1.2 mL
3080	Aroclor 1260 in Transformer Oil	5 x 1.2 mL
3081	Aroclor 1016 in Methanol	5 x 1.2 mL
3082	Aroclor 1232 in Methanol	5 x 1.2 mL
3083	Aroclor 1242 in Methanol	5 x 1.2 mL
3084	Aroclor 1248 in Methanol	5 x 1.2 mL
3085	Aroclor 1254 in Methanol	5 x 1.2 mL
3086	Aroclor 1260 in Methanol	5 x 1.2 mL
3090	Aroclors in Transformer Oil (set SRMs 3075-3080)	5 x 1.2 mL
3091	Aroclors in Methanol (set SRMs 3081-3086)	5 x 1.2 mL

Technical Contact: Michele Schantz

E-Mail: michele.schantz@nist.gov

NIST SRM 2036 Near Infrared Wavelength/Wavenumber Reflection Standard

Standard Reference Material (SRM) 2036 is a certified transfer standard intended for the verification and calibration of the wavelength or wavenumber scales of Near-Infrared (NIR) spectrometers operating in transmittance or diffuse reflectance mode. Typically these spectrometers will use either fiber optic probes or integrating sphere accessories. SRM 2036 is a reflection standard designed to compliment NIST's existing SRMs 2035/2065 NIR transmission wavelength standards. These SRM's are rare earth oxide (REO) doped glasses containing of samarium, ytterbium, holmium, and neodymium.

In addition, SRM 2036 is physically contacted with a piece of sintered polytetrafluoroethylene (PTFE). The combination of the REO glass with a nearly ideal diffuse reflector provides seven reflection-absorption bands that are useful for wavelength calibration in the NIR spectral region. These NIR bands range from approximately 15% R to 40 % R. SRM 2036 is certified for the 10% band fraction

centroid of seven bands in the spectral region from 10,300 cm^{-1} to 5130 cm^{-1} (vacuum wavenumber) at 8 cm^{-1} constant wavenumber resolution.

Because the bands of SRM 2036 are sufficiently broad, the band locations are invariant, within the stated uncertainties, for wavenumber resolutions between 4 cm^{-1} and 64 cm^{-1} resolution. These values will be useful for the verification of the wavenumber scale of NIR Fourier Transform spectrometers. The same seven bands are certified for the 10% band fraction centroid location spanning the spectral region from 975 nm to 1946 nm (air wavelength) for spectral slit widths of 3 nm, 5nm and 10 nm.

These values will be useful for scanning grating spectrometers with single element detectors as well as dispersive spectrometers employing diode array detection. In addition, information values are provided for 13 additional reflection bands in the uv-visible portion of the spectrum ranging from 334 nm to 805 nm, as several commercial scanning spectrometers have useable ranges from 400 nm to 2500 nm.



A unit of SRM 2036 consists of the optical filter-PTFE assembly mounted in an optical holder, contained in a wooden box.

*Technical Contact: Steven Choquette
Email: steven.choquette@nist.gov*

NIST SRM 2395 Human Y Chromosome DNA Profiling Standard



The Y chromosome is passed largely unchanged from father to son and contains genes that endow the recipient with characteristics that make him male. Forensic DNA testing laboratories, genetic genealogy companies, and academic groups studying human history perform Y chromosome testing by examining a number of genetic markers. The ability to obtain consistent and reliable results between laboratories that share information through DNA databases is critical. To address this need, NIST has developed a human Y chromosome DNA profiling standard, SRM 2395, that can be used to check the

accuracy of analytical methods used to measure Y chromosome variation at common short tandem repeats (STR) and single nucleotide polymorphism (SNP) markers. Details regarding the Y STR and Y SNP markers analyzed in SRM 2395 can be found at a NIST-sponsored database on the internet:

<http://www.cstl.nist.gov/biotech/strbase>.



One unit of SRM 2395 consists of six frozen tubes of DNA, each of which contains approximately 100 ng of well-characterized extracted human genomic DNA. There are five male samples (Components A-E) and one female sample (Component F) packaged in a single box. The female specimen may be used as a negative control for Y

chromosome specific assays.

The Certificate of Analysis lists typing results for 31 Y STR and 42 Y SNP markers commonly used in Y chromosome testing. DNA sequencing has been performed on 22 of the 31 Y STRs to permit an even more extensive characterization of those markers. The certification of SRM 2395 components is valid until 31 December 2008.

Technical Contact: M.C. Kline

Email: margaret.kline@nist.gov

NIST SRM 3230 Iodine-129 Isotopic Standard (Low Level)

NIST SRM 3231 Iodine-129 Isotopic Standard (High Level)

Nuclear fission activities and fuel reprocessing have significantly elevated the levels of ^{129}I in the terrestrial ecosystem. Although measurements of this isotope in human thyroid tissue have indicated an increase over pre-nuclear background levels, they are currently not considered to be of radiological significance. Environmental ^{129}I measurements are important for assessing future impact on human health and to gain further knowledge of ^{129}I distribution and environmental behavior.

These SRMs are intended for use in instrument calibrations and for quality assurance of mass spectrometry measurements of ^{129}I . This long-lived radionuclide (half-life 1.57×10^7 yr.) is a significant indicator of fission activity. Accelerator mass spectrometry (AMS) has been used successfully to measure $^{129}\text{I} / ^{127}\text{I}$ ratios to global background levels ($< 1 \times 10^{-12}$ found in iodine reagents, for instance).

TABLE 1. CERTIFIED VALUES FOR SRM 3230 AND SRM 3231

SRM 3230 (Low Level)	Certified Value
$^{129}\text{I} / ^{127}\text{I}$ Isotope Ratio, Level I	$4.920 \times 10^{-10} \pm 0.062 \times 10^{-10}$
$^{129}\text{I} / ^{127}\text{I}$ Isotope Ratio, Level II	$0.985 \times 10^{-12} \pm 0.012 \times 10^{-12}$
SRM 3231 (High Level)	Certified Value
$^{129}\text{I} / ^{127}\text{I}$ Isotope Ratio, Level I	$0.981 \times 10^{-6} \pm 0.012 \times 10^{-6}$
$^{129}\text{I} / ^{127}\text{I}$ Isotope Ratio, Level II	$0.982 \times 10^{-8} \pm 0.012 \times 10^{-8}$

Negative thermal ionization mass spectrometry (NTIMS) and, more recently inductively coupled plasma mass spectrometry (ICP-MS) have been shown to have excellent absolute detection limits and these techniques do have an established place in monitoring waste and potential discharges from reprocessing activities. SRM 3230, which is a "low level" standard and SRM 3231, a "high level" standard, were produced gravimetrically using well-characterized sources of ^{129}I and high-purity natural iodine, and verified by AMS in collaboration with the PRIME Laboratory, Purdue University, IN.

A unit of SRM 3230 / SRM 3231 consists of five amber borosilicate glass ampoules containing approximately 5 mL of iodine solution. Each unit

contains two ampoules each of two different $^{129}\text{I} / ^{127}\text{I}$ ratios, together with one ampoule of blank iodine solution which contains no added ^{129}I . The certified values for SRMs 3230 and 3231 are provided in Table 1.

*Technical Contact: Stephen E. Long
E-Mail: selong@nist.gov*

NIST RM 8457

Ultra High Molecular Weight Polyethylene

Reference Material 8457 is intended for use in studies of the effects of ionizing-radiation processing methods on the wear characteristics of ultra high molecular weight polyethylene (UHMWPE). RM 8457 is supplied in the form of 0.5 cm cubes that are sized for measurements of network parameters by ASTM method F2214.

Ultra high molecular weight polyethylene (UHMWPE) is widely used in orthopedic joint replacement implants. Associated with the growing use of these devices in younger, more active patients is concern of long term durability, particularly effects of wear erosion of the plastic surface. In response to this concern, manufacturers and researchers are inducing new chemical

linkages, which are termed "crosslinks", in UHMWPE, in order to improve its wear resistance. Ionizing radiation is one method that is known to produce these new chemical linkages. Determination of the extent of crosslinking as a result of variations in processing methods involving radiation is critical to improving and controlling wear resistance.

ASTM International has published a new standard method of determining the degree of cross-linking in UHMWPE. The method, F2214-02: Standard Test Method for In Situ Determination of Network Parameters of Crosslinked Ultra High Molecular Weight Polyethylene (UHMWPE), determines the volumetric expansion of UHMWPE specimens immersed in an organic liquid. Specimens in the form of cubes are the preferred geometry. To qualify the new ASTM standard test method a round robin evaluation was conducted on 0.5 cm cubes of UHMWPE, which had been

irradiated with gamma radiation at four exposure levels. The test samples for the round robin were supplied by NIST from its reference material, RM 8456. NIST is now making similar cubes available as RM 8457 for studies into the effects of ionizing radiation on molecular properties of UHMWPE.

Each unit of RM 8457 consists of 10 cubes of ultra high molecular weight polyethylene (UHMWPE) of nominal dimension 0.5 cm.

Technical Contact: Bruno Fanconi
Email: bruno.fanconi@nist.gov

NIST SRM Exhibit Schedule



ASM Materials Solutions
October 13-15, 2003
David Lawrence Convention
Center Pittsburgh, PA

EAS- Eastern Analytical
November 17-20, 2003
NJ Convention Center,
Somerset, NJ

**Measurement Science
Conference**
January 12-16, 2004
Anaheim, CA

**American Academy for
Forensic Science**
February 16-21, 2004
Adam's Mark Hotel
Dallas, TX

**Pittsburgh Conference
(Pittcon)**
March 7-12, 2004
McCormick Place
Chicago, IL

**American Chemical Society
(ACS)**
March 29-31, 2004
Anaheim Convention Center
Anaheim, CA

NOBBCCHE
April 11-17, 2004
San Diego, CA

Analytica
May 11-14, 2004
Munich, Germany

**Institute of Food
Technologist (IFT)**
July 13-16, 2004
Las Vegas Convention Center
Las Vegas, NV

**American Association of
Clinical Chemists (AACC)**
July 25-29, 2004
Los Angeles Convention Center
Los Angeles, CA

**American Chemical Society
(ACS)**
August 23-25, 2004
Philadelphia Convention Center
Philadelphia, PA

**Association of Official
Analytical Chemists (AOAC)**
September 19-23, 2004
St. Louis Convention Center
St. Louis, MO

**Eastern Analytical
Symposium (EAS)**
November 11-14, 2004
Somerset Convention Center
Somerset, NJ

NIST SRM Group News



Jennifer S. Colbert

REFERENCE MATERIAL ACHIEVEMENT AWARD

Presented to Jennifer C. Colbert
National Institute of Standards
and Technology (retired),
Natchitoches, Louisiana, USA

Dr. Jennifer C. Colbert was presented the Reference Material Achievement Award by the Technical Division for Reference Materials (TDRM). She is being honored for her support of TDRM from its inception. While at the National Institute of Standards and Technology (NIST), she has been a consistent force for progress in the development of food-related and other reference

materials that address industrial, clinical, and academic needs for calibration, method validation, and quality assurance. Dr. Colbert has coordinated certification activities for standards in several technical categories. She has served on the Washington Editorial Review Board at NIST since 1989, organized workshops, and managed the SRM program's documentation process. She has retired from NIST, but continues her interest in reference materials by functioning as an SRM customer service representative.

SRM SPECIAL PUBLICATIONS 260's

We now have our SRM Special Publications 260's posted on our website for your convenience. If you would like to receive your newsletter via e-mail, please send your e-mail address to: Spotlight@nist.gov

Revisions

Certificate Revisions—Are you Using These Materials?

Below is a list of our most recent certificate revisions. To gain maximum benefit from a NIST SRM, the certificate in possession must be current. NIST updates certificates for a variety of reasons, such as the extension of the certificate date or to include additional information gained from stability testing. If you do not have the most recent certificate for your material, download a copy from the website at: www.nist.gov/srm, or contact SRM at: telephone (301) 975-6776 fax (301) 926-4751 or email: srminfo@nist.gov.

SRM 114p Portland Cement Fineness

Addendum with particle size distribution added

SRM 956a Electrolytes in Frozen Human Serum

Reference values for glucose were added.

SRM 1549 Non-Fat Milk Powder

New Expiration Date:
25 January 2013

SRM 1647d Priority Pollutant PAHs

New Expiration Date:
31 December 2008

SRM 1677c Carbon Monoxide in Nitrogen 10 $\mu\text{mol/mol}$

New Expiration Date:
03 April 2009

SRM 1776 to 1780 Naval Brass SRMs

1776 to 1780
Certifications Revised,
Expiration Date Added:
NIST has determined that several elements certified as part of the Naval Brass SRMs 1776 to 1780 are in error. This has resulted in the corresponding de-certification of these values as reflected in the revised certificates dated September 17, 2003. In addition, an expiration date of December 31, 2004 has been assigned to the SRMs. Even though this material will likely remain stable for many years,

the period of NIST certification has been abbreviated because the criteria used in the original certification, do not meet current NIST certification requirements. SRM 1107 and SRM 1108 are possible alternatives.

SRM users are asked to replace the original certificates for SRM 1776 to 1780, dated July 14, 1995, with the revised certificates, dated September 17, 2003. The revised certificates are available from the NIST SRM web site.

SRM 1951a Lipids in Frozen Human Serum

Reference values for glucose were added. New Expiration Date: 31 October 2005.

Revisions continued...

SRM 1963 Nominal 0.1 μm Diameter Polystyrene Spheres

New Expiration Date:

31 January 2010

Revised Intended Use:

SRM 1963 remains suited for calibration of electron microscopes and surface inspection systems, specifying that certification is for primary particles *only* and that agglomerates may exist in high concentrations. SRM 1963 is *no longer* suitable for screen testing or other uses that require monosized, unagglomerated spheres. The certificate revised 25 August 2003, corrects the approximate mass concentration provided as part of the unit's description in the first paragraph of the certificate.

SRM 2392 Mitochondrial DNA Sequencing (Human)

New Expiration Date:

31 May 2008

Replacement of reverse primer

SRM 2538 Polarization-Mode Dispersion

Editorial Changes

SRM 2709 San Joaquin Soil

This SRM has been updated to include that it has been radiation sterilized.

New Expiration Date:

This material is valid until 31 December 2011.

SRM 2710 Montana Soil

This SRM has been updated to include that it has been radiation sterilized.

New Expiration Date:

This material is valid until 31 December 2011.

SRM 2711 Montana Soil

This SRM has been updated to include that it has been radiation sterilized.

New Expiration Date:

This material is valid until 31 December 2011.

SRM 2721 Crude Oil (Light-Sour)

Certified Hg value and uncertainty updated.

SRM 2722 Crude Oil (Heavy-Sweet)

Certified Hg value and uncertainty updated.

SRM 2740a Carbon Monoxide in Nitrogen 10% $\mu\text{mol/mol}$

Change in certified value

New Expiration Date:

03 April 2009

SRM 2741a Carbon Monoxide in Nitrogen 13% $\mu\text{mol/mol}$

Change in certified value

New Expiration Date:

03 April 2009

SRM 2810 Rockwell C Scale Hardness – Low Range

Expiration date and annex revised to reflect the extension of the date of expiration for selected units.

New Expiration Date for serial numbers 95N25001 to 95N25140: 08 December 2007

New Expiration Date for serial numbers 97C25501 to 97C25563: 01 May 2011

Revisions continued...

SRM 2811 Rockwell C Scale Hardness – Mid Range

Expiration date and annex revised to reflect the extension of the date of expiration for selected units.

New Expiration Date for serial numbers 95N45001 to 95N45140: 08 December 2007
New Expiration Date for serial numbers 97C45501 to 97C45559: 01 May 2011

SRM 2812 Rockwell C Scale Hardness – High Range

Expiration date and annex revised to reflect the extension of the date of expiration for selected units.

New Expiration Date for serial numbers 95N63001 to 95N63140: 08 December 2007
New Expiration Date for serial numbers 97C63513 to 97C6360201: 01 May 2011

SRM 2910 Calcium Hydroxyapatite

Change in unit size
New Expiration Date:
30 March 2013

SRM 3127a Lanthanum Standard Solution

New Expiration Date:
01 April 2005

SRM 3132 Manganese Standard Solution

New Expiration Date:
01 April 2005

SRM 3156 Tellurium Standard Solution

New Expiration Date:
01 April 2005

SRM 3167a Yttrium Standard Solution

New Expiration Date:
01 January 2005

SRM 3194 Aqueous Electrolytic Conductivity

New Expiration Date: This material is valid until 19 November 2004.

SRM 3198 Aqueous Electrolytic Conductivity

The certified value for SRM 3198 (Lot 031301) has changed effective 07 August 2003. Only customers who had not previously consumed the SRM will need to use the updated value. This revision reflects an updated certified value for electrolytic conductivity and editorial changes.

Renewal SRMs

SRM 186-I-g Potassium Dihydrogen Phosphate

SRM 186-II-g Disodium Hydrogen Phosphate

SRM 1474a Polyethylene Resin

SRM 1974b Organics in Mussel Tissue

SRM 2193a Calcium Carbonate pH Standard

SRM 2392-I Mitochondrial DNA Sequencing (Human HL-60 DNA)

SRM 3190 Aqueous Electrolytic Conductivity